

Fungi and Algae

Fungi:

During rainy season, a large number of umbrella-shaped mushrooms emerge on dung-piles. Fluffy mass of tangled threads like structure with black-dots of molds is also often seen growing on oranges and bread, these mushrooms and molds are fungi.

Characteristics of Fungi

1. Fungi are simple heterotrophic eukaryotes which cannot manufacture their food and have absorptive mode of nutrition (e.g. absorbed prepared food).
2. Cell wall is made up of Chitin instead of cellulose.
3. Some fungi are parasitic while others are saprotrophs.
4. Parasitic fungi obtain their food from other living organisms.
5. Saprotrophic fungi get their food from dead animals, plants, their wastes and decaying materials.

Economic Importance of Fungi

Fungi are useful as well as harmful to humans. e.g.

Useful Aspects of Fungi:

Saprotrophic Fungi

Saprotrophic fungi chemically break down dead bodies of organisms and their wastes into simple components. They clean the environment and also cause the recycling of nutrients.

Mycorrhizal Fungi

Mycorrhizal fungi improve the growth production of crop plants.

Edible Fungi

Mushrooms and some other fungi are edible.

Antibiotics

Some antibiotics are also obtained from some fungi. For example, Penicillin, the first antibiotic discovered in 1928 by Alexander Flemming. Penicillin is obtained from the fungus penicillium.

Yeasts

Yeasts are used in making bread and alcohol.

Mushroom:

1. During rainy season, a large number of umbrella like mushrooms emerge on dung piles.
2. Mycelium of mushroom is saprotrophic, spreading under ground in the soil that contains, decaying and organic matter.
3. When spores are to be formed, many hyphae of mycelium come out of the soil to form umbrella shaped fruit body, the familiar mushroom. It can be 3,4 inches in height.
4. Fruit body consists of two main parts; a lower stalk or stipe, and an upper umbrella shaped cap or pileus which bears annulus around it just below the cap.
5. On maturation, many radial plates or gills are seen on the underside of the cap on which enormous numbers of spores are produced.
6. Some mushrooms, like Agaricus, can be used as food before their fruit bodies become overripe. Agaricus is rich in protein. Some mushrooms, like Amanita, are deadly poisonous.

(Diagram)

Algae:

Algae are a group of simple eukaryotes in which, like plants, chlorophyll is found. They are photosynthetic autotrophs and have cellulose in their cell wall. However unlike plants but like fungi, their organs are unicellular and body is simple, thallus. Therefore they are placed in another kingdom, the Protista.

Algae, are mostly (found in water). A large number of algae are found in vast saltwater oceans. These are called marine algae, other are found in lakes, ponds, puddles, streams and rivers. These

are called fresh water algae. Some marine algae, called the kelps and grow as long as 60 meters or more in a season. Some of them are used as food.

Characteristics of Algae

1. All the algae have chlorophyll so they are autotrophic; they make their own food by photosynthesis.
2. Their cell walls are made up of cellulose.
3. Algae are mostly marine found in the sea. While others are found in fresh water lakes, ponds, puddles, streams and rivers and they are also found in damp soil.
4. Their plant body is called a thallus without a true root, stem or leaf.
5. Algae are sometimes classified on the basis of the pigments they contain. Their green colour can be masked by the presence of other pigments.
6. Their reserved food material is starch.
7. Algae have a wide variety from unicellular algae, e.g. chlamydomonas and spirogyra to multicellular large seaweeds like sargassum.
8. Previously algae were regarded as plants and were placed in thallophyta.

Chlamydomonas:

It is fresh water green alga, commonly found in fresh pond and drains. It is single celled green algae which are seen only under a microscope.

Structure

1. Chlamydomonas is spherical, oval or pear-shaped.
2. The cell is enclosed by a cell wall which maintains its shape.
3. In the anterior part, the cell wall forms an outgrowth called apical papilla.
4. Two flagella (singular flagellum) arise from the cytoplasm below the apical papilla and come out through the cell wall. These help in swimming.
5. A thin cell membrane lies beneath the cell wall, it represents the outer surface of cytoplasm.

6. In cytoplasm, there is, a cup shaped chloroplast, which is involved in production of food by process of photosynthesis.
7. The chloroplast contains, a spherical structure called pyrenoid in its posterior part, and a single red orange light-sensitive eye-spot on one side in its anterior regions.
8. The pyrenoid is supposed to store carbohydrates in the form of starch grains.
9. The eye spot helps chlamydomonas to determine its position and direction according to changes in the intensity of light.
10. There are two contractile vacuoles near the base of flagella 'which periodically expel excess water and waste from the cell.
11. A nucleus is present in the middle of chloroplast in the cytoplasm.
12. Although body, of chlamydomonas consists of a single cell, yet it performs all the basic functions of life. It reproduces both sex and asexual.

(Diagram)

Spirogyra:

1. Spirogyra is a multicellular filamentous green alga. It is found in great abundance in fresh water ponds, lakes and streams. Its filamentous thallus consists of cylindrical cells.
2. These cells are joined end to end, to form un-branched filaments. Usually the filaments are found occurring in a large number.
3. The filaments are surrounded by a layer of mucilage that makes them slippery.
4. During day time, the oxygen produced during photosynthesis stores in the mucilage and the filaments start floating on the surface of water.
5. Each cell of Spirogyra is usually twice as long as broad.
6. The cell is surrounded by cellulosic cell wall. A peripheral layer of cytoplasm is present just inside the cell wall and around a large, central vacuole.
7. The vacuole is filled with cell sap.
8. A single nucleus is suspended near the vacuole by cytoplasmic strand.

9. The most prominent part of cell is its chloroplast. There may be one or more than one chloroplasts in each cell. The chloroplasts run along the length of the cell in the form of spiral ribbon in the peripheral cytoplasm.

10. Numerous pyrenoids are located in a row in the chloroplast and are meant for storing starch. Spirogyra continually grows in length by cell division.

11. Each cell can be divided into two, so filament increases in length. The Spirogyra reproduces both sexually and asexually.

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